



Stocker Cattle Production and Management Practices in Oklahoma

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Since 1983, the Oklahoma Beef Cattle Manual written by 16 lead authors from 6 academic disciplines, has been a key resource for beef cattle producers, extension professionals, veterinarians, and many others in the beef cattle industry (Lalman and Doye 2005). The manual has been distributed through local Extension offices, producer meetings, and by e-mail request from an Oklahoma State University (OSU) website (<http://agecon.okstate.edu/cattleman/>). Producers who received a copy of the Oklahoma Beef Cattle Manual between 2004 and 2006 were asked to complete a "Beef Cattle Management Practices Assessment," a survey documenting their current beef production and management practices. Two surveys were distributed: one for beef producers with a cow-calf herd (who may or may not have had stockers), a second for producers only with stocker cattle.

This Extension Fact Sheet summarizes stocker production and management practices for Oklahoma producers. Further information on stocker economics can be found in Peel 2006¹. The demographics of survey respondents will be briefly summarized in this fact sheet in addition to producer responses regarding nutrition and production management, forage and introduced pasture management, quality assurance and animal health, marketing and risk management and business planning management. Tables and charts graphically depicting producer responses to all survey questions can be accessed at the Master Cattleman website listed above. Complete results can be found in Johnson 2008².

Procedures

Data generated from the survey instrument was used to classify producer respondents into groups based on herd

¹ Peel, D.S. 2006. The Veterinary Clinics: Food Animal Practice. "Beef Cattle Growing and Backgrounding Programs." 22(2): 271-296.
² Johnson, Rachel J., 2008. "The Adoption of Best Management Practices in Stocker Cattle Production." Master's Thesis. Department of Agricultural Economics, Oklahoma State University, Stillwater, Oklahoma.

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size, percentage of net household income generated from the stocker enterprise, and specialization in beef production. Stocker producers were categorized into three size groups based on number of stocker/feeders managed each year: 1) small operations: 1 to 100 head, 2) medium operations: 100 to 500 head, and 3) large operations: 500+ head (Table 1). Producers were classified as either income dependent or non-income dependent: 1) Non-income dependent producers generated 0 to 40% of their past year's net household income from the stocker operation and 2) Income dependent producers generated 41 to 100% of their past year's household income from the stocker operation. The third category used to evaluate management practice adoption behavior was specialization: 1) Specialized beef producers raised only stocker cattle and 2) Diversified beef producers had both a cow-calf and stocker operation. Statistical tests were used to assess differences and similarities between the producer groups within each category. One hundred and seventy-eight producers had stockers only as a beef enterprise. Of the total 745 cow-calf survey respondents, 431 (57.85%) indicated that they had stocker cattle as well. Tables 1-3 depict the percentages and number of producer responses corresponding to each category.

Table 1. Percentage and Number of Producer Responses by Operation Size.

<i>Number of stocker/feeder cattle managed each year</i>	<i>Percent of Responses</i>	<i>Number of Responses</i>
Small (1-100)	38.2	68
Medium (100-500)	32.0	57
Large (500+)	28.8	53

Table 2. Percentage and Number of Producer Responses by Income.

<i>Percentage of past year's household net income from stocker operation</i>	<i>Percent of Responses</i>	<i>Number of Responses</i>
0-40%	63	110
41-100%	37	66

Table 3. Percentage and Number of Survey Types.

<i>Survey Type Respondents</i>	<i>Percent of Responses</i>	<i>Number of Responses</i>
Stocker survey respondents	30	178
Cow-Calf survey respondents	70	432

Demographics of Stocker Survey Respondents

Survey respondents were asked a variety of questions pertaining to operational and personal characteristics. Highlights of the demographic profile are mentioned below.

- Of all respondents, 95% were male and 5% were female and more than half (53%) were over age 50. Nearly, 82% of producers had attended some college, graduated from college, or completed post-graduate work.
- Nearly half of all producers (48%) indicated that they had no off-farm employment while 33% of respondents were employed full-time off the farm. Nineteen percent of respondents indicated having part-time off-farm work.
- Overall, 70% of producers indicated that generating enough income to reduce off-farm work was a very important objective for their stocker operation. Fifty-nine percent also highly valued the objective of choosing management practices to reduce labor use. The use of the internet for business purposes was highly valued by only 25% of respondents.

Nutrition and Production Management

A wide variety of questions were asked regarding nutrition and production management practices pursued by the producer (Table 4). Mineral supplementation is recommended

any time cattle are grazed. More producers (79%) nearly always provide a commercial mineral for cattle grazing spring and summer pastures than provide salt (44%). Approximately half (49%) provide both.

The optimal approach for supplementation is to conduct forage tests, estimate animal requirements, and determine nutrients that need to be supplemented when forages alone do not nutritionally suffice. Using software can also be helpful in designing a supplementation or feeding plan. However, producers differ widely in their strategies for supplementation. Thirty-one percent of producers nearly always conduct forage tests and estimate animal requirements and 7% nearly always use software to develop a supplementation plan. Statistical differences exist between operation size and type producer groups. The majority of producers (72%) use a supplement that has worked well in the past.

Research has shown that implants are one of the most cost-effective technologies available to cattle producers (Reuter, Highfill, and Lalman 2005). Implants increase the rate of growth, measured in average daily gain (ADG) and both the metabolic and economic efficiency of growth, often providing calves the capacity to increase weight gains by 8 to 18%. Considering implanting practices, 59% of producers nearly always implant steers and 43% of producers nearly always implant heifers. Large and specialized producers are statistically more likely to implant cattle. Nine percent of producers implant heifers intended as replacements. Implants are not appropriate if calves are being targeted for an all natural beef retail market.

Dehorning cattle is a practice that not only reduces carcass damage, thus yielding economic benefits, but producers can often expect to receive a higher price at sale from dehorned cattle. Fifty-eight percent of producers indicate that they nearly always dehorn cattle.

Table 4. Nutrition and Production Management Survey Responses¹.

	<i>All Producers (as %)</i>	<i>Operation Size</i>			<i>Operation Income</i>		<i>Operation Type</i>	
		<i>Small Operations (% of total)</i>	<i>Medium Operations (% of total)</i>	<i>Large Operations (% of total)</i>	<i>Non-Income Dependent Producers (% of total)</i>	<i>Income Dependent Producers (% of Total)</i>	<i>Diversified (% of total)</i>	<i>Specialized (% of total)</i>
Provide a commercial mineral	79	71	83	87	74	89	79	79
Provide salt	44	46	41	43	46	43	45	44
Provide both a white salt and commercial mineral	49	51	46	48	47	52	53	49
Use forage tests and estimated animal requirements to determine type of supplement	31	23	29	44	23	41	32	31
Use OSU or other software to design a supplementation or feeding plan ^{a,c}	7	4	18	0	9	3	16	7
Use a supplement that has worked well in the past	72	62	81	75	70	76	68	72
Implant steers ^{a,c}	59	38	70	78	54	71	29	59
Implant heifers not intended to be saved ^{a,c}	43	26	50	63	39	56	19	43
Implant heifers intended as replacements ^a	9	5	13	10	7	8	10	9
Dehorn cattle with horns ^{a,c}	58	60	56	56	56	62	55	58

^a Statistical significances between operation size groups.

^b Statistical significances between income dependency groups.

^c Statistical significances between specialized and diversified groups.

¹ Percent of respondents indicating they nearly always implement a practice.

Forage and Introduced Pasture Management

Careful consideration of forage production management practices can significantly reduce winter-feeding costs. Feed costs account for approximately one-fourth of the costs of production, second only to the purchase price of the animal (Redfean and Caddel 2006). Hay is by far the most common livestock winter-feeding option. Many producers have high feeding costs because they either use hay that is low in nutritive value, or feed hay for too long of a time period during the winter months. Producers were asked to specify their typical hay feeding season length. Less than half of all producers (46%) indicated having a hay feeding season less than 90 days in length (Table 5). Specialized producers are statistically more likely to have a shorter hay feeding season length.

Soil tests reveal the exact amount of fertilizer needed to maintain soil nutrient levels and thus optimize forage growth. Just as soil tests can guard against inefficient fertilizer use thus reducing costs, testing hay and silage can also realize economic benefits with the information being used to adjust the amount of supplement being fed. Fifty-two percent of producers conduct soil tests every 3 to 4 years. Twenty-five percent of producers nearly always conduct forage tests on produced forages, while 20% nearly always test purchased forages. Large and income dependent operations are more likely to conduct forage tests.

Since forage utilization represents such a critical cost factor in stocker production, knowing how to set a proper stocking rate is key to stocker profitability, ensuring maximum profitability attributed to both plant and animal performance. Overall, 52% of producers indicated that they knew how to set and monitor proper stocking rates. Large, income dependent,

Table 5. Forage and Introduced Pasture Management Survey Responses¹.

	All Producers (as %)	Operation Size			Operation Income		Operation Type	
		Small Operations (% of total)	Medium Operations (% of total)	Large Operations (% of total)	Non-Income Dependent Producers (% of total)	Income Dependent Producers (% of Total)	Diversified (% of total)	Specialized (% of total)
Typical hay feeding season 90 days or less ^c	46	38	44	57	44	44	32	46
Soil tests conducted at least once every 3-4 yrs ^a	52	52	53	54	44	69	58	52
Producer has knowledge of setting and maintaining proper stocking rates ^{a, b, c}	52	36	54	64	40	68	42	52
Forage tests conducted for produced forages ^{a, b}	25	13	21	42	20	32	20	25
Forage tests conducted for purchased forages ^{a, b}	20	11	18	33	13	32	15	20
Stockpile fescue or Berumdagrass for fall and winter grazing	46	43	51	41	45	46	44	46

^a Statistical significances between operation size groups.

^b Statistical significances between income dependency groups.

^c Statistical significances between specialized and diversified groups.

¹ Percent of respondents indicating they nearly always implement a practice.

Table 6. Quality Assurance and Animal Health Survey Responses¹.

	All Producers (as %)	Operation Size			Operation Income		Operation Type	
		Small Operations (% of total)	Medium Operations (% of total)	Large Operations (% of total)	Non-Income Dependent Producers (% of total)	Income Dependent Producers (% of Total)	Diversified (% of total)	Specialized (% of total)
Pesticides used to control ticks	84	81	84	90	81	88	77	84
Pasture rotation used to control ticks	30	28	39	24	28	32	37	29
Prescribed fire used to control ticks ^b	13	7	16	18	7	23	14	13
Cattle are dewormed ^b	93	88	94	98	88	98	n.a. ²	n.a.
Modified live vaccines used ^{a, b}	61	44	44	88	50	83	n.a.	n.a.
Killed vaccine products used	25	27	73	18	26	20	n.a.	n.a.
Ownership of cattle is retained through finishing phase	25	23	25	28	23	30	n.a.	n.a.
Cattle are individually identified	89	82	88	79	17	17	n.a.	n.a.
Intramuscular injections administered in neck ^{a, b, c}	80	69	87	86	74	90	84	80

^a Statistical significances between operation size groups.

^b Statistical significances between income dependency groups.

^c Statistical significances between specialized and diversified groups.

¹ Percent of respondents indicating they nearly always implement a practice.

² n.a. is shown when no comparable question was asked about stocker production on the cow-calf producer survey.

and specialized producers are statistically more likely to have knowledge in setting proper stocking rates.

Furthermore, management practices that extend grazing and reduce hay feeding have been found to improve profitability of the enterprise. An alternative to feeding hay during the winter, and thus a method to reduce winter feeding costs is to stockpile forages. Stockpiling bermudagrass or fescue for fall or winter grazing is a practice routinely performed by 46% of producers.

Quality Assurance and Animal Health

Concerning animal health management practices, controlling internal and external parasites plays an important role in animal weight gain, which is the crux of stocker production. There are several viable options available when it comes to controlling ticks to reduce beef cattle weight loss, such as pesticides, pasture rotation, and prescribed fire. As indicated in Table 6, pesticides are the most common method employed by producers for tick control (84%). Thirty percent of producers use pasture rotation and 13% use prescribed fire as a means of tick control. Internal parasites in cattle decrease growth performance by reducing feed intake, utilizing nutrients that would otherwise be available to the animal, and impairing proper utilization of nutrients. A relatively high percentage (93%) of producers indicate cattle are dewormed.

Vaccination in general can be viewed as an investment. The risk of contracting the disease and the cost of treating it must be weighed against the cost of the vaccination. Viral or bacterial vaccines may be classified as killed or live. Live vaccines contain bacteria or a virus that has been modified (MLV) thus weakening the virus and rendering it inactive. Killed vaccines are void of any ability to cause disease. Both vaccines have advantages and disadvantages; 61% of producers indicate nearly always using modified live vaccines while 25% indicate using killed vaccine products. Large and income dependent producers are statistically more likely to use MLV vaccines.

Retained ownership is a type of integration in the beef production process. The term refers to extended ownership of cattle from one phase of production to the next. In the case of stocker production, ownership would be retained into the feedlot stage. Retained ownership affords the producer the opportunity to realize greater economic returns due to a greater number of marketing options available to the producer. Twenty-five percent of producers retain ownership of cattle through the finishing phase.

There are multiple benefits associated with individual animal identification. Nationally, the primary objective of individual identification is disease containment and control. However, producers who individually identify stocker cattle can realize the benefits of tracking animal performance. Most producers (89%) indicate cattle are nearly always individually identified.

Injection site lesions arise from the administration of intramuscular injections (IM). Blemishes result in not only visual defects but they require further processing, resulting in increased toughness in the end product (USDA-APHIS 2000). A recommended practice for avoiding injection site lesions is to administer IM injections in the neck region of the animal, a practice followed by 80% of all producers. Statistical differences exist between all three producer groups concerning the administration of IM injections.

Marketing and Risk Management

Marketing cattle and managing risk is an area of beef production of particular importance to stocker producers who often face increased risk due to factors such as price volatility and narrow margins of cattle weight gain. Preconditioning is a health and nutrition management program designed to strengthen young cattle against the stresses of transportation and maintain performance. While also adding value, purchasing preconditioned cattle reduces risk for stocker producers. As indicated in Table 7, 32% of all producers purchase at least a percentage of their cattle preconditioned.

The type of production system employed by stocker producers can vary greatly. Stocker producers may raise cattle seasonally or year round, using small grains pasture, warm or cool season grasses or any combination thereof. The type of production system employed by the producer will affect the time period in which cattle are received. Forty-six percent of all producers indicate that they receive cattle from September through November. Thirty-four percent of producers nearly always graze cattle on small grains pasture with 18% indicating that cattle are grazed during the summer. Approximately half of all producers (49%) nearly always graze cattle year round.

Considering forage bases used for stocker production, the majority of producers (61%) indicate that warm season forages are nearly always used for grazing. Small grains pasture is the primary forage base for 23% of producers and 16% of producers indicated that cool season forages are primarily used for grazing stockers. Statistical differences exist between size and income dependency groups concerning time of grazing and primary forage base. Medium sized operations and income dependent producers are the most likely to graze cattle during the winter and spring on small grain forage. Sixty-four percent of producers indicate that cattle are marketed seasonally (1 to 3 times per year).

Buyers of feeder cattle generally pool cattle together into large lots. When cattle are purchased that have already been pooled together into larger lot sizes, often truckload lots, pooling is made easier and a premium is often paid. Research showed that increasing lot size from 1 head to 10 to 15 resulted in price premiums averaging near \$2.50/cwt over that period of time (Ward 2005). Transaction costs can also be reduced when larger lots are purchased by buyers as opposed to purchasing several smaller lots and putting them together. Overall, 43% of producers indicate they market cattle in large truckload lots. Likewise, buyers pay a premium for uniform lots. Uniform lots may consist of cattle with a similar frame, muscling, weight, and breeding. Using 2001-2003 data, Ward (2005) found that average sale price increased \$1.91/cwt for the sale of uniform lots. A strong majority (74%) of all producers market cattle in uniform lots. Larger, income dependent, and specialized producers are statistically more likely to market cattle in large, uniform lots.

Feeder cattle prices are among the most difficult to predict due to the constantly changing demand for slaughter cattle attributed to changing feed prices and shifting demand in both domestic and international markets. Utilizing futures and options contracts are among the risk management strategies available to producers when marketing cattle. Thirty-four percent of all producers indicate using futures contracts, 29% indicate using options contracts, and 26% of producers indicate using cash contracts. Statistical differences are determined

Table 7. Marketing and Risk Management Survey Responses¹.

	All Producers (as %)	Operation Size			Operation Income		Operation Type	
		Small Operations (% of total)	Medium Operations (% of total)	Large Operations (% of total)	Non-Income Dependent Producers (% of total)	Income Dependent Producers (% of Total)	Diversified (% of total)	Specialized (% of total)
A percentage of cattle purchased are preconditioned ^b	32	23	29	48	21	47	n.a. ²	n.a.
Cattle are received Sept- Nov ^a	46	31	54	52	44	47	n.a.	n.a.
Cattle are grazed winter/ spring on small grains forage ^{a, b}	34	30	67	56	41	64	n.a.	n.a.
Cattle are grazed during the summer	18	56	55	61	54	67	n.a.	n.a.
Cattle are grazed year round	49	57	51	52	56	53	n.a.	n.a.
Small grains pasture is used for grazing ^{a, b}	23	53	83	83	67	84	n.a.	n.a.
Warm season forages are used for grazing	61	62	64	68	64	57	n.a.	n.a.
Cool season forages are used for grazing	16	24	12	8	18	18	n.a.	n.a.
Cattle are marketed seasonally (1-3 times per year) ^{a, b, c}	64	68	75	45	64	62	78	64
Cattle marketed in truckload lots ^{a, b, c}	43	6	53	88	31	65	16	43
Cattle marketed in uniform lots ^{a, b, c}	74	61	82	85	68	84	62	74
Producer uses futures contracts ^{a, c}	34	21	25	65	28	40	17	34
Producer uses options contracts ^{a, c}	29	10	31	55	23	40	16	29
Producer uses cash contracts ^{a, c}	26	10	20	43	20	33	17	26

^a Statistical significances between operation size groups.

^b Statistical significances between income dependency groups.

^c Statistical significances between specialized and diversified groups.

¹ Percent of respondents indicating they nearly always implement a practice.

² n.a. is shown when no comparable question was asked about stocker production on the cow-calf producer survey.

between operation type and size concerning the use of risk management tools.

Business Planning Management

The cattle business at times can be very costly, time consuming, and stressful making business planning a particularly important endeavor for producers. A business plan defines the operation's goals, identifies limitations, and includes financial plans. Livestock are realistically matched to land resources, appropriate markets are targeted, and financial resources are identified. Thus, the ultimate goal of business planning is to move the enterprise in a direction so a producer's goals and objectives will be fulfilled and to provide a feasible operational/financial plan for fulfilling those goals. A business plan can be particularly useful for stocker operators since it can serve as an important reference for producers seeking financing. As shown in Table 8, half of all producers (50%) indicate having a long term business plan (5 years or longer).

There are multiple alternatives to record keeping. Financial records serve as the foundation for accurate budgets, financial statements, and tax reports. Financial accounts may include personal transactions, monetary value of transactions, balances owed, etc. Record keeping can be time consuming but it is often also financially rewarding. Sixty-four percent of all producers enter expense and receipt data into a record system at least monthly. The amount of information collected, the method of recording data, and the structure of reports typically vary between farm record systems and every producer

must decide the amount of information required for financial purposes as well as the system that will best provide desired information. The first option is to simply store receipts and bills in a box or file. This is considered a minimal record keeping system. Summarizing income and expenses in a notebook or ledger is another option for producers as a slightly more formal record keeping system. Finally, there are numerous computerized recordkeeping systems such as Quicken, QuickBooks, Redwing, and Farmworks as well as custom spreadsheets and databases that producers themselves can create. Fifty-two percent of producers use a computerized recordkeeping system with income dependent producers statistically more likely to use such a system.

Financial statements are not only useful for assessing financial performance, but also for planning future financial strategies. A balance sheet, or net worth statement, is a summary of the values of assets held by the producer and demonstrates the producer's equity in the business. A cash flow evaluates the flow of money and helps to determine when cash is available for debt payment. Similarly, a surplus or deficit of money at a time period is demonstrated which can help a producer determine when savings or credit is needed. The income statement reflects a profit or loss in the operation. A strong majority of producers (80%) prepare a balance sheet, 71% of producers draft a cash flow statement, and 86% of all stocker producers prepare income statements at least annually. Specialized producers are more likely to prepare all three types of financial statements.

Table 8. Business Planning and Management Survey Responses¹.

	All Producers (as %)	Operation Size			Operation Income		Operation Type	
		Small Operations (% of total)	Medium Operations (% of total)	Large Operations (% of total)	Non-Income Dependent Producers (% of total)	Income Dependent Producers (% of Total)	Diversified (% of total)	Specialized (% of total)
Producer has long term (5 yrs or more) business plan	50	47	49	52	47	57	44	50
Receipt and expense data is entered into a record system (at least monthly) ^{b, c}	64	58	39	71	59	73	57	64
A computerized recordkeeping system is used ^b	52	41	61	60	44	66	38	52
Balance sheets are prepared (at least annually) ^c	80	75	80	91	74	88	66	80
Cash flow statements are prepared (at least annually) ^{a, c}	71	61	71	84	65	79	57	71
Income statements are prepared (at least annually) ^{b, c}	86	81	90	93	80	97	73	86
Records are maintained on vaccinations ^c	65	72	66	57	64	68	60	65
Records are maintained on medical treatments ^b	63	63	64	62	60	68	54	63
Records are maintained on source of cattle	66	58	68	76	61	75	75	61

^a Statistical significances between operation size groups.

^b Statistical significances between income dependency groups.

^c Statistical significances between specialized and diversified groups.

¹ Percent of respondents indicating they nearly always implement a practice.

Regarding cattle recordkeeping, not only can this practice help the producer to select the optimal treatment for cattle in terms of animal health, but keeping animal records can also be useful in calculating expenses in financial statements. Records are maintained on vaccination history, medical treatments, and the source of cattle by 65%, 63%, and 66% of producers, respectively.

Summary and Conclusions

Oklahoma stocker producers who received an Oklahoma Beef Cattle Manual provided information on their current production practices. Producer responses regarding numerous and specific production practices in the categories of nutrition, forage and introduced pasture, and quality assurance and animal health are summarized in this Extension Fact Sheet along with the demographic characteristics of the producers surveyed and their operations.

Statistical differences regarding management practice adoption behavior are also identified between relevant producer groups. Producer groups have been categorized according to operation size, income dependency, and specialization versus diversification. Considering the statistical differences between producer groups, larger operations, income dependent producers, and specialized beef production are all factors influencing the adoption of recommended management practices in stocker cattle production. Operation size and income dependency strongly influenced the adoption

of a variety of marketing, risk management, and business planning management practices.

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